

25X1

IN 57848

25X1 S E C R E T 151753Z MAR 68 CITE [REDACTED]

E&E

15 MAR 68

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[REDACTED] INFO [REDACTED]

15 MAR 68
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OXCART OPS/LIFE SUPPORT

SUBJ: MID AIR MODIFICATION OF THE CYGNUS CANOPY

N 1. THE FOLLOWING TEST OBJECTIVES WERE INDICATED BY

[REDACTED]

A. TO STUDY THE FEASIBILITY OF ADOPTING A FOUR OR SIX LINE CUT DURING DESCENT TO MAKE THE PARACHUTE STEERABLE.

B. TO MEASURE RATES OF TURN AND DESCENT WITHIN FOUR AND SIX LINE CUTS AND COMPARE TO UN-MODIFIED CANOPIES.

C. TO DETERMINE IF PILOTS IN FULL PRESSURE SUIT ARE SUFFICIENTLY UNRESTRICTED IN MOVEMENT TO PERMIT MAKING LINE CUTS.

D. TO OBSERVE ALL FACETS OF SAFETY WITH REGARD TO FUTURE USE BY PROJECT PILOTS.

2. THE FOLLOWING TESTS HAVE BEEN ACCOMPLISHED TO DATE WITH QUALIFIED PARARESCUE TECHNICIANS MAKING ALL JUMPS.

A. TOTAL 4 LINE CUT 4

INTER-2
OOPS
R4D-2
OXC-2
RB
DSA

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[REDACTED] S E C R E T

- TOTAL SUCCESSFUL 4
- B. TOTAL 6 LINE CUT (WITHOUT SUIT OR KIT) 7
- TOTAL SUCCESSFUL 7
- C. TOTAL 6 LINE CUT (WITH FULL SUIT AND SEAT KIT) 8
- TOTAL SUCCESSFUL 2
- TOTAL UNSUCCESSFUL 6
- D. TOTAL 6 LINE CUT WITH SEAT KIT ONLY 2
- TOTAL SUCCESSFUL 2
- E. TOTAL TEST JUMPS 21

3. TEST FINDINGS ARE:

A. THE SIX LINE CUT GIVES OPTIMUM TURN AND SLIP PERFORMANCE. TURN RATE AVERAGED 30 SECONDS FOR A 360 DEGREE TURN. DESCENT WITH FULL SUIT AND KIT AVERAGED 52 SECONDS PER THOUSAND FEET, PRODUCING A FAVORABLE DESCENT RATE OF APPROX 19 FPS.

B. THE HIGH RATE OF UNSUCCESSFUL JUMPS WAS DUE ALMOST ENTIRELY TO LACK OF MOBILITY AND RESTRICTION TO MOVEMENT WHILE WEARING FULL PRESSURE SUIT AND SEAT KIT. JUMPERS WERE UNABLE TO PULL AND HOLD RISERS DOWN TO MAKE MODIFICATIONS CUTS. ONE FULL SUIT JUMP WAS CONSIDERED A FAILURE DUE TO THE SEAT KIT

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SEPARATING (DUE TO HARDWARE FAILURE) THEREBY PRODUCING IMPROPER WEIGHT CONDITIONS.

C. DURING FIVE UNSUCCESSFUL JUMPS THE JUMPER WAS ABLE TO CUT THREE LINES ON ONE RISER. IT WAS NOTED THAT WITH JUST THREE LINES CUT THE CONTROL AND MANIPULATION SHOWED A MARKED IMPROVEMENT.

D. ATTEMPTING THE MID AIR MOD AT ALTITUDES ABOVE 8000 FT MAY REDUCE THE CHANCE OF SUCCESS, AS THE JUMPERS EFFECTIVENESS IS SOMEWHAT LIMITED DUE TO PHYSICAL EXERTION AT THESE HIGH ELEVATIONS. JUMP ALTITUDES FOR THE TEST PROGRAM RANGED FROM 5800 FT MSL TO 12,500 FT MSL. THE TWO SUCCESSFULL FULL SUIT AND KIT JUMPS WERE MADE AT APPROX 9000 MSL WITH CUTS MADE AT APPROX 8000 MSL BUT REQUIRED MAXIMUM EXERTION. DROP ZONE ALTITUDE WAS 4600 FT.

E. THIS SERIES OF TESTS DEMONSTRATED THAT THE SIX LINE CUT IS DEFINITELY DESIRABLE IN THAT IT INCREASES CONTROL OF THE CYGNUS CANOPY. HOWEVER, IT IS VERY UNLIKELY THAT A PROJECT PILOT WOULD BE ABLE TO ACCOMPLISH THE MID AIR MOD USING THE MC-1 KNIFE WHILE ENCUMBERED BY THE PRESSURE SUIT AND SEAT KIT.

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4. [REDACTED] HAVE DESIGNED A TELESCOPIC KNIFE

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WHICH WOULD PERMIT MAKING LINE CUTS WITHOUT HAVING TO PULL RISORS
DOWN. TESTS WILL CONTINUE USING THIS KNIFE.

S E C R E T

TELESCOPIC PARACHUTE LINE CUTTER

A. Parts List:

1. Pocket cutter and lanyard FSN 1670-779-1253.
2. URC-4 radio antenna.
3. Cord, nylon braided, type #1, 100 pound tensile strength. FSN 4020-262-2148.
4. 7/8" screw.

B. Construction:

1. The outer one (1) inch was cut off the knife hook blade.
2. The 7/8" screw was silver-soldered to the shank end of the hook blade and dressed down.
3. The pocket cutter handle was disassembled and grooved out with a hot round iron.
4. One of the URC-4 antenna horizontal sections was then inserted in the handle and the handle was laced with 100 lb line. The halves should be fastened more securely in production models but the wrapping retained for a good grip.
5. The safety lanyard was attached and the hook blade screwed into the antenna.
6. Although no difficulty was encountered during tests, it is considered advisable to use a telescoping section about 2 inches longer than the URC-4 antenna on production models.

INTELL-2

OPS

R&D-2

OXC-2

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REF: [REDACTED]

1. TESTS OF THE TELESCOPING HOOK BLADE KNIFE HAVE BEEN COMPLETED.
THE KNIFE HAS BEEN TEST JUMPED FOUR TIMES BY BOTH [REDACTED] AND
[REDACTED] WITH FULL PRESSURE SUIT AND SEAT KIT. SIX LINE CUTS
WERE QUICKLY COMPLETED WITH VIRTUALLY NO EXERTION ON ALL JUMPS.
HOWEVER, IT IS NECESSARY TO LOOSEN THE NECK RING TAKE-UP STRAP SO
THE JUMPER CAN GET HIS HEAD BACK SUFFICIENTLY TO SEE THE MARKED
LINES ON THE REAR RISERS THAT ARE TO BE CUT.

2. RECOMMEND THAT A TELESCOPING HOOK BLADE KNIFE BE ADOPTED AND
ISSUED TO ALL PROJECT PILOTS ASAP. THIS KNIFE FITS EASILY IN THE
SUIT KNIFE POCKET. THIS CAPABILITY IS ESPECIALLY REQUIRED FOR
DEPLOYED OPERATIONS.

3. SAMPLE KNIFE, PARTS LIST, AND DESCRIPTION OF CONSTRUCTION IS
BEING FORWARDED TO [REDACTED]

SECRET